

Claims

- [c1] A wireless detector comprising:
- a sensor that detects the presence of a vehicle;
 - a transmitter that wirelessly transmits data;
 - a controller that controls operation of the sensor, and that buffers sensor data and controls operation of the transmitter to transmit the sensor data at predetermined times; and
 - power control circuitry for intermittently powering the sensor.
- [c2] The wireless detector of claim 1 further comprising a transceiver including the transmitter and a receiver that wirelessly receives data;
- [c3] The wireless detector of claim 2 wherein the receiver is only active during limited time intervals.
- [c4] The wireless detector of claim 1 wherein the transmitter transmits data using a sparse time-division multiplexed protocol.
- [c5] The wireless detector of claim 1 wherein the power control circuitry intermittently powers the transmitter.
- [c6] The wireless detector of claim 1 wherein the sensor includes one or more magnetic field sensors.
- [c7] A system comprising a plurality of the wireless detectors of claim 1, the system further comprising a base station communicating with each of the plurality of wireless detectors, each one of the wireless detectors monitoring a parking space for a vehicle.
- [c8] The wireless detector of claim 1 further comprising a vibrational sensor, the detector being activated in response to a vibration detected by the vibrational sensor, and the detector being deactivated in response to a period of time without a detected vibration.
- [c9] The wireless detector of claim 1 further comprising a buffer that stores sensor data, the transmitter being activated when an amount of sensor data stored in

the buffer reaches a predetermined threshold.

[c10] The wireless detector of claim 1 wherein a signal from the sensor is analyzed to determine a vehicle type.

[c11] An apparatus comprising:

- a sensor that detects the presence of a vehicle;
- a transmitter that wirelessly transmits data;
- a controller that controls operation of the sensor, and that buffers sensor data and controls operation of the transmitter to transmit the sensor data at predetermined times;
- power control circuitry that intermittently powers the sensor; and
- a pavement reflector enclosing the sensor, the controller, and the transmitter, the pavement reflector suitable for withstanding vehicular traffic.

[c12] The apparatus of claim 11 wherein the pavement reflector is formed from methyl methacrylate.

[c13] An apparatus comprising:

- a plurality of wireless vehicle detectors, each detecting the direction of vehicles, the wireless vehicle detectors arranged into zones;
- a base station coupled in a communicating relationship with the plurality of wireless vehicle detectors, the base station receiving vehicle detection signals from each of the plurality of wireless vehicle detectors, and
- a processor coupled in a communicating relationship with the base station, the processor receiving the vehicle detection signals from the base station and processing the vehicle detection signals to determine a movement of vehicles among the zones.

[c14] The apparatus of claim 13 wherein the processor is a component of the base station.

[c15] The apparatus of claim 13 wherein the processor resides on a computer accessible to the base station through a network.

[c16] The apparatus of claim 13, wherein the zones comprise zones arranged about an entrance and exit to a location, the base station processing the vehicle detection signals to track vehicles entering and exiting the location.

[c17] The apparatus of claim 13 wherein each one of the plurality of wireless vehicle detectors detects the presence of a vehicle in a parking space.

[c18] A wireless detector comprising:

a sensor means for detecting the presence of a vehicle;

a transmitter means for wirelessly transmitting data;

a control means for controlling operation of the sensor and buffering sensor data, and for controlling transmission of the sensor data at predetermined times; and

power control means for intermittently providing power to the sensor.

[c19] A method for conserving energy in a wireless vehicle detector comprising:

intermittently powering a sensor to gather data;

detecting the presence of a vehicle as sensor data;

buffering the sensor data; and

wirelessly transmitting the sensor data at predetermined times.

[c20] The method of claim 19 further comprising:

sensing vibrations of an approaching vehicle; and

in response to the sensed vibrations, powering the sensor to gather data.